NAVAL WAR COLLEGE
Newport, R.I.

Rising China and the ASW Problem

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

10 May 2007

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
10-May-2007	FINAL	

4. TITLE AND SUBTITLE

Rising China and the ASW Problem

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

David A. Kummings, Lieutenant Commander, U.S.N

Paper Advisor (if Any): **N/A**

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Joint Military Operations Department
Naval War College
686 Cushing Road
Newport, RI 02841-1207

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

Distribution Statement A: Approved for public release; Distribution is unlimited.

13. SUPPLEMENTARY NOTES A paper submitted to the faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.

14. ABSTRACT

China is quickly developing a navy that has at its center, a formidable conventional and nuclear submarine force that has the potential to effectively deny the littoral, 'contested zone' in a near-term maritime conflict arising in East Asian waters. Further, as the People's Liberation Army Navy's (PLAN) modernization and expanding submarine force ventures out of the "brown water" and into the "green water," the United States must acknowledge China as a credible threat and military power and thus reorient the U.S. Navy's neglected antisubmarine warfare capability. The Littoral Combat Ship is not a panacea for ASW; more attack submarines in the U.S. fleet are crucial to maintain maritime dominance. The PLANs burgeoning fleet of both nuclear and modern diesel-electric submarines demands a significant investment by the U.S. Navy to develop and institutionalize an effective doctrine and training center that focuses on ASW in the littoral environment.

15. SUBJECT TERMS

Anti-Submarine Warfare, China

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
					Chairman, JMO Dept
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER *(include area code)*
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED		23	401-841-3556

Standard Form 298 (Rev. 8-98)

Abstract

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China is quickly developing a navy that has at its center, a formidable conventional and nuclear submarine force that has the potential to effectively deny the littoral, 'contested zone' in a near-term maritime conflict arising in East Asian waters. Further, as the People's Liberation Army Navy's (PLAN) modernization and expanding submarine force ventures out of the "brown water" and into the "green water," the United States must acknowledge China as a credible threat and military power and thus reorient the U.S. Navy's neglected antisubmarine warfare capability. The Littoral Combat Ship (LCS) is not a panacea for ASW; more attack submarines in the U.S. fleet are crucial to maintain maritime dominance. The PLANs burgeoning fleet of both nuclear and modern diesel-electric submarines demands a significant investment by the U.S. Navy to develop and institutionalize an effective doctrine and training center that focuses on ASW in the littoral environment.

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"In the First World War, the battleship was the most important vessel; and in the Second World War, it was the aircraft carrier. [But in] the future, I believe the most critical naval asset will be the nuclear submarine."

-Peng Shilu, 2002, designer of China's first naval nuclear reactor[1]

Introduction

China's impressive economic growth has allowed them to significantly increase their defense industrial base spending while leveraging their human capital to develop a navy that has at its center, a formidable conventional and nuclear submarine force that has the potential to effectively deny the littoral, 'contested zone' in a near-term maritime conflict arising in East Asian waters. Further, as the People's Liberation Army Navy's (PLAN) modernization and expanding submarine force ventures out of the "brown water" and into the "green water," the United States must acknowledge China as a credible threat and military power and thus revitalize the U.S. Navy's neglected antisubmarine warfare capability. The examination of China's naval modernization efforts over the past decade would suggest the adoption and adherence to three fundamental tenets. First, the PRC has identified the United States' strategic center of gravity to be its current global maritime dominance status. Second, antisubmarine warfare (ASW) is inherently difficult and the U.S. is presently well below average in its capabilities to conduct an effective ASW operation in an East Asian littoral environment. Third, the PRC believes the submarine to be "the poisoned arrow, or *Shashou jian*, to the Achilles Heel of American might."[2]

In the great chase to prepare for the next domestic terrorist attacks, the United States Navy has been largely reoriented towards providing maritime security and ensuring the world's

[1] Andrew S. Erickson and Lyle J. Goldstein, "China's Future Nuclear Submarine Force: Insights from Chinese Writings," *Naval War College Review* 60, no.1 (Winter 2007): 59.
[2] U.S. Congress, House Armed Services Committee, "China's Military Power: Testimony of John J. Tkacik, Jr., 27 July 2005. Accessed on the web 27 February 2007 at http://www.heritage.org/Research/AsiaandthePacific/tst072705.cfm

strategic sea lines of communication remain open for our incredibly interdependent global economy. Navy Admiral Harry Ulrich, Commander, Allied Joint Force Command Naples remarked, "Today we don't talk about 'defense,' we talk about 'security.'"[3] The massive undertaking by the world's navies, coast guards and maritime police forces to deny terrorists the ability to transport and infiltrate a country with a weapon of mass destruction, has become a maritime focus, and perhaps rightly so—the consequences are unacceptable in any civilized culture. However, in the aftermath of the September 11th attacks the U.S. Navy must not let its core competencies of being able to project sea power into the "contested zone" atrophy at the expense of maritime security. Thus, at the heart of the Navy's ability to effectively conduct combat operations in enemy waters lies the challenge of waging a dominant antisubmarine warfare campaign.

China's Asymmetric Strategy

The United States military currently enjoys "command of the commons", that is, command of the 'blue-water' sea, the air at altitudes above 10,000 feet, and space. Because it has no peer competitor, the U.S. military can operate unimpeded in these areas and simultaneously deny access to anyone it chooses.[4] However, in the "contested zone"—on foreign land, below 10,000 feet and in the crowded littorals around the world, the United States' superior military advantage is lessened.[5] In the maritime portion of the "contested zone", or littorals, the U.S. Navy is forced to simultaneously confront and defend itself in three dimensions against a combination of unidentified small boat attacks, enemy surface

[3] Adm. Harry Ulrich, U.S.N, Commander, Allied Joint Force Command Naples (address, Naval War College, Newport, RI, 5 April 2007).
[4] Barry R. Posen, "Command of the Commons: The Military Foundation of U.S. Hegemony," *International Security* 28, no.1 (Summer 2003): 8.
[5] Ibid., 22.

combatants, naval mines, mobile land-based antiship missiles, land-based aircraft and a pack of quiet, modern diesel electric submarines with versatile, lethal weapons systems. The noisy, cluttered and potentially hostile littoral environment, combined with the poor acoustical transmission properties of shallow water and the background noise of coastal traffic, create a waterspace extremely unfavorable to ASW. Additionally, crucial to any submarine detection is initial surveillance or cueing from a network of fixed underwater sensors such as the Sound Surveillance Systems (SOSUS) or the more advanced Fixed Distributed System (FDS). During the Cold War, SOSUS was highly effective at detecting Soviet submarines as they transited the Atlantic and Pacific Oceans, however, those legacy locations are mismatched with today's diesel submarines in littoral regions, thereby further reducing the U.S. technological advantage.[6] In this environment our proverbial "home-field" advantage is lost. The U.S. military can certainly still fight decisively and prevail in these areas but it would undoubtedly be both time and asset intensive and perhaps incur much greater costs, both in blood and treasure—possibly more than American citizens are willing to endure.

As the U.S. Navy is drawn from the 'commons' and into the 'contested zone,' the surface and subsurface threats shift from the customary Cold War scenarios to an unfamiliar, unconventional and asymmetric threat, characterized in the East Asian littorals. The PLAN will exploit their local environment to employ an asymmetric strategy that outlines how an inferior force can prevail against a superior opponent. Mao Zedong once succinctly characterized China's enduring asymmetric warfare philosophy: "You fight your way, and I

[6] John R. Benedict, "The Unraveling and Revitalization of U.S. Navy Antisubmarine Warfare, *Naval War College Review* 58, no. 2 (Spring 2005): 108.

fight my way."[7] In many ways the military buildup between the U.S. and Soviet Union that defined the Cold War was the exact antithesis of this modern asymmetric strategy. Although closely held, the U.S. and Soviets each had observed and documented doctrine, tactics and technology on the other. The concurrent escalation between both brought the two navies to a mutually understood battlefield, whether it was the GIUK gap[8] or the Bering Sea. In this blue-water environment the U.S. had a clear concept of operations that envisioned far-forward offensive deployments and layered defenses. Both nations had similar capabilities that matched the order of battle of the adversary: nuclear submarine versus nuclear submarine, bomber versus bomber, and fighter aircraft versus equally capable fighter aircraft. The PLANs current strategy does not fit neatly into this framework. Today, the United States as the world's pre-eminent naval power, must conduct a myriad of missions in as many different theaters with increasingly constrained resources and access, and thus risks becoming a 'jack of all trades, master of none' with ASW as its most crucial operational vulnerability.

The Submarine Situation

As of the writing of this paper, it is believed that the PRC has *all* 12 Kilo class SSGs operational.[9] These modern, diesel-electric submarines compose a significant portion of the PLANs conventional undersea arsenal and are reportedly equipped with some of the most sophisticated and lethal Russian technology.

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[7] U.S. Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China* (Washington, DC: Government Printing Office, 2006), 13.

[8] Greenland-Iceland-United Kingdom gap - an area in the northern Atlantic Ocean that forms an undersea choke point. During the Cold War it was considered the only available outlet into the ocean for Soviet submarines operating from their bases on Kola Peninsula.

[9] Janes, "Submarines forces," http://www8.janes.com/search/printfriendlyview.do?docId=/content1/janesdata/yb/juws (accessed 27 March 2007). These are made up by 10 of the more modern Type 636's and 2 basic Type 877's.

First, the Kilo possesses superior battery power, an enhanced digital sonar system, slower turning (less cavitation) screws and quieter main engines. The Office of Naval Intelligence estimates the 636 Kilo to be as quiet as an Improved Los Angeles (SSN-688) class submarine—and quieter than a Russian Akula-class SSN, a Bristish Trafalgar-class SSN or a basic Los Angeles-class SSN.[10]

Second and even more impressive are the significant advances made in the Kilo's weapons systems capabilities'. They come with the advanced "Klub" weapon system which will provided the submarine the ability to remain submerged to fire both land-attack and antiship cruise missiles that perform a sea-skimming, supersonic terminal homing phase capable of evasive maneuvering to avoid detection and counter air engagements.[11] The missile is the SS-N-27B/Sizzler cruise missile that has a reported range of more than 220 kilometers (118 nautical miles). Also, the Kilo is capable of carrying three types of torpedoes: the Type 53-65 wake-homing torpedo primarily used for attacking surface ships which has a 21 inch diameter and 670 pound warhead, and is very similar in performance and capability to the U.S. Mk-48 ADCAP; the wire-guided TEST-96 torpedo primarily used for attacking submarines;[12] and the Russian-made, Shkval supercavitating torpedo, which reportedly can achieve speeds in excess of 200 knots and can be used both in an attack as well as an effective countermeasure to an incoming torpedo.[13] U.S. submarines currently do not have a counter-torpedo weapon for destroying an incoming torpedo, but instead rely on evasive maneuvers and the use of expendable decoys. The operational importance of these

[10] Shirley A. Kan, Christopher Bolkcom, and Ronald O'Rourke, *China's Foreign Conventional Arms Acquisitions: Background and Analysis* (Washington, DC: Congressional Research Service, 10 October 2000), 60.
[11] Eric A. McVadon, "China's Maturing Navy," *Naval War College Review* 59, no. 2 (Spring 2006): 97.
[12] Kan, Bolkcom, and O'Rourke, *China's Foreign Conventional Arms Acquisitions*, 63-64.
[13] Lyle Goldstein and William Murray, "China's Subs Lead the Way," U.S. Naval Institute *Proceedings* 129, no.3 (March 2003): 58. Detailed operating specifications of Shkval torpedo found at Globalsecurity.org, http://www.globalsecurity.org/military/world/russia/shkval.htm (accessed 20 April 2007).

advanced weapons lies not simply with the formidable specifications of speed and warhead size, but rather with the devastating operational effects caused by a single successful attack. For example, concerning a successful torpedo attack by a 21-inch torpedo against a U.S. Navy surface combatant one analyst estimated, "…the results could be devastating. At a *minimum*, the ship would be seriously or severely damaged and could lose much if not most or all of its combat potential. At a *maximum*, the keel of the ship could break and the ship could sink quickly [emphasis added]."[14] The report further notes the possibility of increased survivability for a larger ship with greater compartmentalization, such as an amphibious ship or aircraft carrier, though flight operations could be stopped and effectively result in a 'mission kill.'[15]

Third, along with potent weapons systems, PLAN submarines have also seen advances in their propulsion systems. Although these new Kilo's are not believed to possess air independent propulsion (AIP) which would allow them to remain submerged for weeks at a time without snorkeling, there is mounting evidence that China has reengineered their Song-class SS (Type 39G) to include advanced AIP.[16] Additionally, recent photos have emerged of China's newest indigenously designed conventional submarine, the Yuan-class SS (Type 41) that likely has AIP and many other weapon's systems similar to the Kilo class.[17] Rear Admiral Malcom Fages summarized how the modern, conventional submarine has made a 'bad situation worse' concerning antisubmarine warfare:

> The marriage of air independent propulsion, nonnuclear submarines with over-the-horizon, fire and forget antiship cruise missiles and high endurance,

[14] Kan, Bolkcom, and O'Rourke, *China's Foreign Conventional Arms Acquisitions*, 65.
[15] Ibid., 66.
[16] Lyle Goldstein and William Murray, "Undersea Dragons," *International Security* 28, no.4 (Spring 2004): 167-169.
[17] Ronald O'Rourke, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, (Washington, DC: Congressional Research Service, 18 November 2005), 6-8.

> wake homing torpedoes…[means that] traditional ASW approaches, employing radar flooding and speed, are not likely to be successful against this threat.[18]

The importance of this burgeoning production in submarines highlights some significant aspects of China's submarine-centric strategy and has both strategic and operational implications. The PLANs shift away from its reliance on acquisition of advanced military technology from Russia and other Western European nations towards indigenously engineered technologies on par with contemporary western submarines indicates both the scientific and economic capabilities required to sustain production as well as the desire to establish a self-sufficient industrial and military base free from political ties. Operationally speaking, the ability of an antisubmarine force to exploit old, noisy and poorly equipped submarines that must surface frequently to recharge its batteries is quickly fading. Historically, an overwhelming majority of adversary submarine detections have been made by visual detection of a periscope, often due to the need to snorkel and recharge batteries[19]—thus, a critical vulnerability of the conventional submarine has been drastically diminished which further complicates ASW.

A further indication of China's submarine-centric naval modernization plan is the rapid development of their nuclear submarine program. For the first time, the PLANs ability to extend beyond its traditional littoral domain and become a legitimate blue-water sea power is quickly becoming a reality with the production of both the Shang-class (Type 093) SSN and Jin-class (Type 094) SSBN, designed to replace their aging Han and Xia class nuclear submarines.[20] The Shang SSN is a significant leap forward for the PRC as has been

[18] Benedict, "The Unraveling and Revitalization of U.S. Navy Antisubmarine Warfare," 102.
[19] This is based on my personal ASW experience and training during my career as a P-3 Mission Commander.
[20] Andrew S. Erickson and Lyle J. Goldstein, "China's Future Nuclear Submarine Force: Insights from Chinese Writings," *Naval War College Review* 60, no.1 (Winter 2007): 55.

compared to a Russian Victor III, as it possesses advanced quieting and sonar capabilities. Additionally, the PRC reports that it has 65-centimeter (25.6 inches) torpedo tubes and will carry Russia's largest wake-homing torpedo, the Type 65/DT/DST 92, specifically designed to destroy aircraft carriers.[21] Although the Jin-class SSBN lags the furthest behind in production with only one boat operational, it still provides the PRC with a legitimate second-strike nuclear capability. China completed its first successful test launch of the JL-2, submarine launched ballistic missile (SLBM) in June 2005. The JL-2 can be launched while submerged, has a range of over 8,000 kilometers, and can be armed with a single or multiple nuclear warheads (MIRVs).[22] With the third Shang SSN and second Jin SSBN currently in production, one analyst estimates that by 2010 that the PLAN will operate 50-60 new to near-new nuclear and conventional attack submarines.[23]

With the purchase of the Russian aircraft carrier *Varyag* in 2001 there has been much debate and little consensus on the plans for carrier aviation in China's future. The Office of Naval Intelligence speculated that although the PLAN has been testing and developing aircraft carrier technologies for many years, "Near-term focus on contingencies in the vicinity of Taiwan has minimized the importance of aircraft carriers in China's acquisition plan…."[24] To that end, with the PRCs dedication and continued development of their nuclear submarine programs, the acquisition of 8 Kilo's from Russia for $1.6 billion, and the

[21] Goldstein and Murray, "Undersea Dragons," 171.
[22] Missile Threat, "Missiles of the World: CSS-NX-5 (JL-2)." Accessed on the web 27 February 2007 at http://www.missilethreat.com/missilesoftheworld/id.34/missile_detail.asp. MIRVs - Multiple Independently targetable Reentry Vehicle.
[23] U.S. Congress, House Armed Services Committee, "China's Military Power - An Assessment from Open Sources: Testimony of Richard Fisher, Jr., 27 July 2005. Accessed on the web 3 April 2007 at http://www.strategycenter.net/research/pubID.76/pub_detail.asp
[24] O'Rourke, *China Naval Modernization*, 10.

domestic production of the new Yuan-class and advanced version of a Song-class SS, it is clear that the submarine is at the center of China's maritime strategy.[25]

Is LCS the solution?

A commonly accepted naval truism is that 'the best way to find a submarine is with another submarine,' but unfortunately for ASW the future procurement schedule for U.S. fast-attack submarines is less than reassuring with current production of about one attack submarine per year. The growing number of Chinese submarines starkly contrasts the ever-decreasing numbers of U.S. submarines. The U.S. had 100 SSNs operational in 1985, and currently operates at about half that number with 53 SSNs. One study shows that by 2020, at current production levels, the American fleet of attack submarines will number approximately 45[26], while China could possess a submarine fleet of nearly 50 modern attack boats.[27] Although the U.S. attack submarines are certainly more capable than even twenty years ago, the modern SSN is a multi-mission platform more often tasked with intelligence, surveillance and reconnaissance (ISR), Tomahawk strike, carrier strike group support, Special Operations Forces equipped SSN missions, and eventually ASW.[28] Despite the annually increasing tasking demand on the U.S. submarine fleet, the response has not been to produce more submarines, but rather to build more surface ships such as the smaller, modular Littoral Combat Ship (LCS).

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[25] Goldstein and Murray, "Undersea Dragons," 165, 168-169.
[26] Ronald O'Rourke, *Navy Attack Submarine Force-Level Goal: Background and Issues for Congress* (Washington, DC: Congressional Research Service, June 2, 2004), 13. Accessed on the web 27 February 2007 at http://www.fas.org/man/crs/RL32418.pdf. See Appendix A, Figure 1, "Potential SSN Force Levels" graph.
[27] Tkacik, "China's Military Power," testimony of 27 July 2005.
[28] O'Rourke, *Navy Attack Submarine Force-Level and Procurement Rate*, 17.

SEA SHIELD and SEA STRIKE, two of the three pillars of the SEA POWER 21 vision for the future U.S. Navy, plan to leverage the capabilities of the Littoral Combat Ship (LCS) to dominate the undersea environment in the littorals. The CNO stated, "The Littoral Combat Ship program remains of critical importance to our Navy. With its great speed and interchangeable war fighting modules, the ship will provide unprecedented flexibility." He further summarized that the 'LCS is the cornerstone of the future Navy and will provide a critical capability to the fleet.'[29] The *Littoral Combat Ship: Concept of Operations* characterizes LCS as a high speed, low draft, OTH capable craft that will network multiple passive and active ASW sensors such as helicopters, sonobouys, sonar, towed arrays, USV/UUV/UAVs with a robust communications suite to provide the joint force commander with a tailored "first response" asset capable of neutralizing any enemy littoral threat.[30]

Although one mission module of the LCS specifically focuses on ASW, it should not be considered a panacea. By default, the LCS complicates the battlespace picture for the enemy submarine by increasing the number of combatants and sensors dedicated to locating, tracking and attacking it. However, as the operational effects of LCS are still unknown to the fleet, one must keep in perspective the claimed, yet unproven, capabilities and limitations it will bring to the fight.

One significant issue for the LCS is its ability to integrate its sensors into an overarching C4 network accessible by other military services as well as foreign allies. The LCS CONOPS calls for the ability to provide a common operating picture of the battlespace, able

[29] United States Navy "Currents," Littoral Combat Ship (LCS) Update, 19 Jan 2007, LCS Program Overview Speaker Notes, accessed on the web 26 April 2007 at www.navy.mil/navco/speakers/currents/LCS_Update_19_Jan_2007.doc

[30] U.S. Navy, Littoral Combat Ship: Concept of Operations V3.1, (Newport, RI: Naval Warfare Development Command, February 2003). Accessed on the web 25 April 2007 http://www.nwdc.navy.mil/CONOPS/Sea_Shield/LCSCONOPS.aspx.

to be distributed. Currently, there is a large gap in the ability to tie all forces together with a joint command and control net that integrates all military assets.[31] The LCS Requirements Officer, CDR James Malloy said, "If LCS can't connect to the force net and share information, we have a problem."[32] The bottom line is that without this integration, the LCS is a stand-alone asset that cannot exploit the abilities of its off-board sensors and contribute to the joint commander's battlespace awareness.

Another obstacle for the LCS in its ASW mission is the amount of time required to gain sufficient intelligence about the enemy. As part of former Defense Secretary Rumsfeld's agenda for defense transformation, his strategy of "10-30-30" calls for seizing the initiative by gaining access to an area of operations within 10 days.[33] Obviously, meeting the demanding 10-30-30 goal will place heavy reliance on maritime forces, specifically ASW forces charged with sanitizing waterspace for follow-on operations. With the presence of a diesel submarine in a littoral environment, the process of gathering intelligence and environmental data could take weeks, which provides enemy submarines enough time to figure out they have been detected. Captain David Yoshihara, Director of the CNOs, Task Force ASW, summarized the problem, "[10 days] is a demanding timeline…ASW takes a long time." Once the submarines have been detected "we have a tendency to lose them, because ASW is a difficult environment," Yoshihara said.[34]

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[31] Sandra I. Erwin, "Shrewd Tactics Underpin Navy Strategy to Defeat Diesel Submarines," *National Defense Magazine*, March 2005. Accessed on the web 18 March 2007e at http://www.nationaldefensemagazine.org/issues/2005/Mar/UF-Shrewd_Tactics.htm

[32] Sandra I. Erwin, "Littoral Combat Ship Sensors Pose Integration 'Challenges'," *National Defense Magazine*, December 2003. Accessed on the web 26 April 2007 at http://www.nationaldefensemagazine.org/issues/2003/Dec/Littoral_Combat.htm

[33] Richard C. Barnard, "Sea Basing Concept Promises a Revolution in Power Projection," *Sea Power Magazine* June 2004, Accessed on the web 26 April 2007 at http://www.navyleague.org/sea_power/jun_04_10.php.

[34] Sandra I. Erwin, "Diesel Submarines Irritant to U.S. Navy," *National Defense Magazine*, August 2004. Accessed on the web 26 April 2007 at http://www.nationaldefensemagazine.org/issues/2004/Aug/Diesel_Submarines.htm.

Additionally, although the LCS' design will reduce its radar cross-signature, as a surface ship it will still be detectable by satellite, a means of locating maritime forces that China plans to employ. China has recognized the importance of targeting and ISR and will track U.S. carrier strike groups with a spectrum of capabilities. In 2004, China launched its third ZY-2 photoreconnaissance satellite since 2000 that will provide high-quality digital imagery with worldwide coverage.[35] Merchant vessels and fishing boats with satellite phones will provide a low-tech, but effective complement to PLANs ISR network.[36]

Although beyond the scope of this paper, the cost overruns of the Navy's plan to build 55 LCS ships are significant to note because they erode the argument in favor of LCS versus the next generation, multi-mission DDGX due to the favorable cost-benefit analysis. Part of the original logic behind the LCS was its low costs and that the Navy could build three ships for the price of a single Arleigh Burke class destroyer, which originally cost around $1.2 billion.[37]

Finally, a very basic yet fundamental fact is that no matter how many LCS' are put into an operational area, it is unlikely that they will be the PLANs 'target of interest.' The PLAN are likely to employ a tactic of 'locate to avoid' when it concerns smaller, less critical targets such as an LCS. Chinese writings are clear that the destruction of a U.S. aircraft carrier is at the forefront of PLAN doctrinal development.[38] Capitalizing on the American public's aversion to mass casualties, one PLA general postured, "We have the ability to deal with an

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[35] Sinodefence, "Jianbing-3 (Ziyuan-2) Earth Remote Sensing Satellite," 12 March 2006. Accessed on the web 24 April 2007 at http://www.sinodefence.com/strategic/spacecraft/ziyuan2.asp .
[36] Goldstein and Murray, "Undersea Dragons," 192.
[37] Grace Jean, "Navy Steaming Ahead With Shipbuilding Plans, But Costs Becoming Problematic," *National Defense Magazine*, April 2007. Accessed on the web 26 April 2007 at http://www.nationaldefensemagazine.org/issues/2007/April/Navysteaming.htm. The original cost of the LCS was estimated to be $220 million each. Recent reports have placed the total cost of the ship to be around $375-400 million. Each mission module is a separate cost at about $70 million per module. The Navy had originally budgeted for 2 modules per ship.
[38] Goldstein and Murray, "Undersea Dragons," 191.

aircraft carrier that dares to get into our range of fire…The U.S. President would find the going harder and harder."[39] As much as the LCS might complicate the ASW picture for the enemy, a superior number of PLAN submarines could exponentially complicate the picture for U.S. forces attempting to conduct an ASW prosecution. The PLAN would likely utilize their older, noisier Ming and Romeo SSs and Han class SSNs, to serve as screens or decoys for their newer, more capable conventional and nuclear submarines.[40] Ironically then, this ASW scenario presents a conundrum to U.S. ASW forces: the older, less lethal threats might be the first detected and most easily tracked and destroyed, but at the expense of another, stealthier submarine passing by undetected and able to attack a carrier or other high value asset. One experienced observer estimates that the PLAN might be able to deploy more than twenty modern SSNs and SSs and roughly the same number of older submarines—a formidable force that would likely overwhelm all U.S. and Allied ASW forces.[41]

To appreciate the difficulty and potential impact of a modern ASW operation, the most applicable case study is the 1982 Falklands War. During the war, an Argentine Type 209 diesel submarine stayed safely at sea for over a month while British antisubmarine forces expended more than 150 depth charges and torpedoes on the submarine but scored no hits. During this time, the Argentine sub was able to execute two attacks on British ships, which were saved only by defective torpedo warheads. From the sinking of U-boats in World War II through the Cold War, the Royal Navy was considered the world leader in conventional ASW. Further, the Royal Navy had focused its training on a Soviet diesel submarine in the European littorals and consequently was proficient with a Type 209 threat, yet was still

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[39] Richard D. Fisher, Jr., "To Take Taiwan, First Kill a Carrier," *The Jamestown Foundation China Brief* 12, no. 14, (8 July 2002). Accessed on the web 27 April 2007 at http://jamestown.org/publications_details.php?volume_id=18&issue_id=654&article_id=4653

[40] McVadon, "China's Maturing Navy," 98.

[41] Ibid.

unable to prevent their forces from being attacked.[42] Similarly, the operational effects of a single Royal Navy nuclear submarine sinking the Argentine cruiser General Belgrano, virtually negated the threat of the Argentine fleet as they sought refuge in their coastal waters.[43]

The Way Ahead

In the end, the complexity of anti-submarine warfare makes it impossible to rely on any one single technology or weapon system, such as LCS. Captain Paul Rosbolt plainly summarized: "There is no silver bullet in ASW. … We can't build a single system that is going to find every submarine in every kind of environment. It will take a mix of systems."[44] Still, much of the development and concepts within the CNOs SEA POWER 21 vision concerning ASW are in the vein of "advanced sensors and networking technologies." Indeed, the United States must mobilize its formidable defense industry and technology base to produce ships, weapons and sensor systems superior to the rest of the world. However, as one analyst differentiates, there are still institutional gaps in the Navy's attempts to revitalize ASW: "neglect in at-sea environmental measurement, intelligence on the threat, and system engineering has undermined the *science* of antisubmarine warfare, while neglect in training and tactical development at the unit, group, and theater levels has undermined the *art*."[45]

As advanced technology has captured the Navy's support for a revitalized ASW force, the "art" of training and development of an effective cadre of ASW war-fighters has taken a back

[42] Benedict, "The Unraveling and Revitalization of U.S. Navy Antisubmarine Warfare," 100.
[43] Robert L. Scheina, "Where Were Those Argentine Submarines?" U.S. Naval Institute *Proceedings*, March 1984, 117.
[44] Erwin, "Diesel Submarines Irritant to U.S. Navy." Capt. Paul Rosbolt oversees ASW programs at the Program Executive Office for Integrated Warfare Systems at Naval Sea Systems Command.
[45] Benedict, "The Unraveling and Revitalization of U.S. Navy Antisubmarine Warfare," 96.

seat. Consequently, with the loss of an archenemy in the Soviet submarine, an entire generation of experienced ASW sailors and airmen has been surpassed by a generation that has no clear ASW vision or concept of operations around which to train. Not unlike the lengthy and training-intensive process of developing a more robust Special Operations Force to help fight the Global War on Terrorism, the road to rejuvenating our ASW force and capabilities will not happen quickly, perhaps not even in five years. It will take a decade to effectively train and develop a force of sailors and aircrews that are well versed, doctrinally united and comfortable operating in the traditionally unfamiliar environment of the littorals.

Attempts are being made to increase the realism and tailor training towards a diesel submarine threat. An example is the recent creation of the high-visibility Fleet ASW Command focused on sharpening commanders' ASW war-fighting skills. Also, the subsequent lease of a Swedish Gotland class SSK diesel submarine for two years, to be used in an OPFOR role during Pacific Fleet exercises will provide U.S. ASW forces a tactically proficient, AIP-equipped target for more realistic training.[46] Still, a greater investment must be made to institutionalize the importance of ASW—to create a legacy of professionals dedicated to the continued improvement and adaptation to the world's submarine threats.

Currently, there is not a comprehensive, standardized ASW training pipeline that specializes in the diesel, littoral threat. The creation of a specialized organization such as the Navy's Fighter Weapons School (TOPGUN) is needed for the ASW community—perhaps "TOPSUB." This command would act as a graduate level school designed to provide the most realistic training and undersea warfare teachings available to U.S. and Allied forces and eventually evolve into a true 'center of ASW excellence.' TOPSUB would bring tactical

[46] Naval Technology, "SSK Gotland Class (Type A19) Attack Submarine, Sweden." Accessed on the web 27 April 2007 at http://www.naval-technology.com/projects/gotland/.

experts and regional subject matter experts from around the world, most in fact, might not be American, to teach rotating submarines, surface forces and maritime patrol squadrons the intricacies of ASW in a littoral environment. The school would be the primary stakeholder and caretaker of an "ASW master plan" or "Concept of Operations" for the entire fleet. Like TOPGUN, TOPSUB would also have an Adversary Training Squadron (ATS) to operate a small fleet of common Rest-of-World (ROW) diesel submarines such as Kilo's and Type 209's. The command could be located alongside Submarine Squadron 15 in Apra Harbor, Guam which would provide forward deployed access to the East Asian littoral waters and strengthen U.S. interests in this very geo-strategic region.

A robust, realistic and demanding training organization are less expensive than reoccurring multi-billion dollar acquisition contracts for future LCS or DDGX ships, and could produce a relatively profitable return on every dollar invested in terms of a more proficient ASW force. Certainly, the U.S. Navy can and should maintain its technological superiority within its force structure; however, it must also be wary not to attempt to apply a purely technological solution to an unfamiliar and unconventional, asymmetric threat.

Conclusion

To be sure, there are no imminent indications that a conflict between the United States and China is brewing, or even inevitable. China's ever-increasing demands for natural resources, commodities and direct foreign investment have inextricably linked the two economies and produced unprecedented global benefits to numerous emerging nations around the world. Any confrontation with China over Taiwan, Economic Exclusion Zone rights, or some other territorial claim dispute, seems unlikely and mutually detrimental to both nations. Still, the U.S. Navy must be totally prepared to conduct offensive antisubmarine operations in the Yellow and China seas of East Asia. The potential threat imposed by a well-trained PLAN submarine force is a credible threat to any modern navy and should not be discounted based on currently positive foreign relations between the PRC and the United States. In July 2005 General Peter Pace, then Vice Chairman of the Joint Chiefs of Staff, responded to a press inquiry about China's military posture in the Taiwan Strait by observing, "you judge military threat in two ways: one, capacity, and two, intent." He then added, "There's absolutely no reason for us to believe there's any intent on [China's] part."[47] While the accuracy of General Pace's comments are debatable, the U.S. Navy must quickly focus and invest in its ASW forces in order to develop a formidable counter to a diesel submarine threat in the littoral environment if America's global maritime dominance is to be extended out of the commons and into the unforgiving contested zone.

[47] John J. Tkacik, Jr., "Pentagon Report on Chinese Military Power Deserves Careful Reading," *The Heritage Foundation*, 25 July 2005. Accessed on the web 27 February 2007 at http://www.heritage.org/Research/AsiaandthePacific/wm804.cfm

Appendix A

Figure 1: Potential SSN Force Levels 2000-2050 (extracted from Ronald O'Rourke, *Navy Attack Submarine Force-Level Goal and Procurement Rate: Background and Issues for Congress*, [Washington, DC: Congressional Research Service, June 2, 2004]:13.)

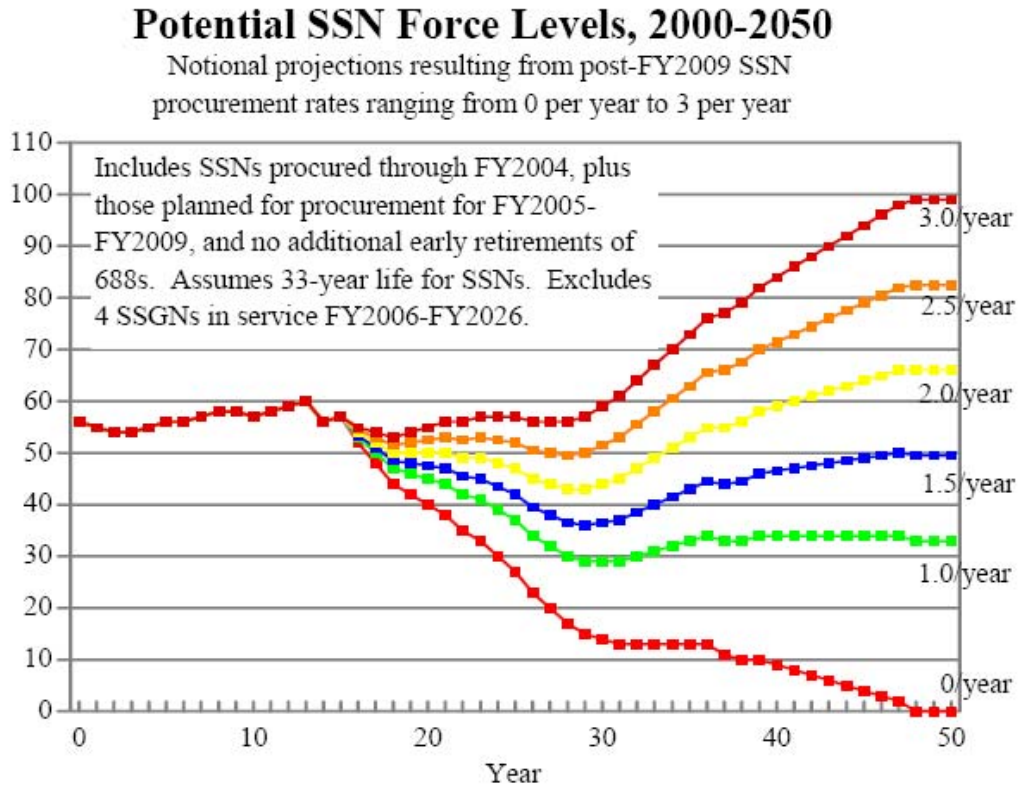

Figure 2: USS Freedom (LCS-1) (accessed from Lockheed Martin website 5 May 2007 at http://www.lmlcsteam.com/index.html)

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